

ABSTRACT

A luminescent material, such as phosphor, is radiated by energy propagated from the side of an optical fiber, causing the luminescent material to emit visible light. The luminescent material can be of a coincidentally-excited type, requiring the absorption of two wavelengths of radiation to emit visible light. In such a case, two side-emitting optical fibers can be used, with each optical fiber providing one of the needed radiation wavelengths. One embodiment of the invention involves a matrix of optical fibers forming an optical display panel made using coincidentally-excited phosphors. Side-emitting optical fibers are used to simultaneously stimulate a phosphor pixel located between the two fibers, allowing matrix addressing of each pixel individually. The optical display panel is constructed of only optical components. Another embodiment involves an optical switch with coincidentally-excited luminescent material. One radiation is provided by a side-emitting optical fiber. To activate the switch, a second radiation is provided by a laser diode.